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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,040	07/03/2003	Myung-Ryul Choi	1293.1733	4263

21171 7590 08/07/2006

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EXAMINER	
CHEN, TIANJIE	
ART UNIT	**PAPER NUMBER**
2627	

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,040	CHOI ET AL.	
	Examiner	Art Unit	
	Tianjie Chen	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14 and 15* is/are allowed.

6)☒ Claim(s) *1-10,13,16* is/are rejected.

7)☒ Claim(s) *11 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Final Rejection (RCE)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-10, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morinaga (JP 8-203259A) in view of Park et al (US 6,859,933) and Hirasaka et al (US 6,690,540).

Claims 1 and 2, Morinaga shows a disk tray 2 for a disk drive in Fig. 5 that slides in and out of the disk drive 1, the disk tray including one or more dampers 10 mounted on a lower surface of the disk tray (Figs. 1-3) to reduce noise.

Morinaga does not show that the dampers selectively reduce noise of at least two predetermined frequency bands.

Park et al shows a resonator 40 having two resonant frequency bands, which is shown in Figs. 7 and 9 (one at about 49 Hz and another one at about 70Hz), which roughly match natural resonance frequency of the movable plate (column 12, lines 48-49) thus effectively reduce a vibration (noise) generated when a disk spins (Column 1, lines 15-18). One of ordinary skill in the art would have been motivated to design the resonator taught by Park et al to tune the resonance frequency bands of the resonators roughly matching the natural frequency band of the tray thus effectively reducing the vibration (noise) generated in the device. In thus constructed device, the resonators selectively reduce noise of two predetermined frequency bands.

Adding Park et al's resonator to Morinaga's device is to reduce the noise having near resonance frequencies generated in Morinaga's device. Morinaga does not specify the frequencies. However, Park et al teaches that the natural frequencies of 49 Hz and 70 Hz as disclosed are just examples for a resonator with set of assumed physical parameters and it is to be modified to fit the particular device with particular natural (resonant) frequencies (Column 6, lines 47-52). Hirasaka et al shows a device with natural frequency in the range of 516.8-1627.7 Hz (Figs. 7 and 8). And Applicant has not disclosed any unexpected results from shifting from <200 Hz to >200 Hz. One of ordinary skill in the art would have been motivated to design the resonator to have natural frequencies to match the frequencies of the device, which may span in a range from 49 Hz to 1627.7 Hz, which would include the frequencies corresponding to dominant noise frequency band above 200Hz.

Claim 2, in above constructed device, each of the one or more resonators from Park et al includes: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of each resonator (Fig. 3); and a resonance container surrounding the through hole and having a predetermined volume; the predetermined frequency bands are inherently determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and a volume of the resonance container.

Claim 5, as described above, Morinaga and park et al show a disk drive including: a disk tray that slides in and out of the disk drive and on which a disk is placed; a disk driving portion rotating the disk at a predetermined speed, and two or more resonators installed on a lower surface of the disk tray to selectively reduce noise of two predetermined frequency bands that corresponds to dominant noise frequency

bands above 200 Hz. Park further shows a disk chucking apparatus 57 holding the disk on the disk driving portion; a data recording/reproducing unit 55 recording data on the disk or reproducing data from the disk.

Claim 6, as described above, Morinaga and park et al show each of the two or more resonators comprises: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of each resonator; and a resonance container surrounding the through hole and having a predetermined volume, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and a volume of the resonance container.

Claim 9, as described above, Morinaga and Park et al shows a resonator system having a plurality of resonator for a disk tray of a disk drive, each of the resonators including: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of the resonator: and a resonance container surrounding the through hole and having a predetermined volume, the resonator being mounted on the disk tray to selectively reduce noise of a predetermined frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container, wherein each of the resonators inherently converts sound energy to thermal energy to reduce a sound pressure level of a resonance frequency to selectively absorb a specific frequency, and wherein at least two of the resonators respectively reduce noise of two different frequency bands corresponding to dominant noise frequency bands above 200 Hz.

Claims 3 and 7, Park et al further shows that the resonator further includes an absorbing member (air) filling the resonance container ([0030]).

Claims 4 and 8, Park et al further shows a bottom surface of the resonance container is open (Fig. 5).

Claim 10, Park et al shows that at least one of the resonators further comprises an absorbing member (air) filling the resonance container to selectively reduce noise of a frequency band higher than the predetermined frequency band at 15 Hz (Fig. 7).

Claim 13, as described above, the combination of Morinaga and Park et al discloses a resonator for a disk tray of a disk drive, comprising: a through hole penetrating the disk tray and operating as an entrance and a bottle neck of the resonator; and a resonance container surrounding the through hole and having a predetermined volume, the resonator being mounted on the disk tray to selectively reduce noise of a predetermined frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container; wherein the resonator converts sound energy to thermal energy to reduce a sound pressure level of a resonance frequency to selectively absorb a specific frequency; and wherein the resonator further comprises an absorbing member filling the resonance container to selectively reduce noise of a frequency band larger than the predetermined frequency band corresponding to dominant noise frequency bands above 200 Hz..

Claim 16, the above constructed device is a disk tray for a disk drive that slides in and out of the disk drive, the disk tray comprising two or more resonators mounted on a lower surface of the disk tray to selectively reduce at least two peak sound

pressure levels that are above 200 Hz, wherein the peak sound pressure levels correspond to dominant noise frequency bands.

Allowable Subject Matter

2. Claims 14 and 15 are allowed.

Claims 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- With regard to claims 11, 12, 14, and 15, as the closest reference on record, the combination of Morinaga (JP 8-203259A) and Park et al (EP 1 207 532 A2) shows a resonator having a resonance container for a disk tray, which is being mounted on the disk tray to selectively reduce noise of a predetermined frequency band, the predetermined frequency band being determined according to an area of a profile of the through hole, a length of the bottle neck of the through hole, and the volume of the resonance container, an absorbing member filling the resonance container to selectively reduce noise of a frequency band; the absorbing member filling the resonance container to selectively reduce noise of a frequency band higher than the predetermined frequency band; but fails to show the absorbing member filling the resonance container is a porous member or a sponge.
- Applicant asserts that by filling the resonance container with a porous member the high frequency noise band and the overall noise level can be reduced (Specification, [0041])

Response to Arguments

3. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TIANJIE CHEN
PRIMARY EXAMINER